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ABSTRACT

In the spring of 1999, the Finnish Ministry of Education devised an information strategy for the period of 2000-2004. This is the second of its kind. The first strategy had been devised to steer national information society development in the fields of education and research from 1995 onwards. The new strategy has aroused a great deal of interest in Finland's foreign colleagues. This Implementation Plan outlines several projects that are part of the new information strategy. For each project outlined, a contact person (or persons) with their email address for additional information. The following projects are described: Citizenship Skills in the Information Society; three-step OPE.FI project for training teaching personnel; training for information industry and digital communication professionals; the virtual university; the virtual school; research and development relating to learning environments; content production; information society structures development; and finally, evaluation of the implementation and impact of the new information strategy. (AEF)

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ED 457 867

INFORMATION STRATEGY FOR EDUCATION AND RESEARCH 2000-2004 IMPLEMENTATION PLAN

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PREFACE

In spring 1999 the Finnish Ministry of Education devised an information strategy for the period 2000-2004. This was the second of its kind. The first strategy had been devised to steer national information society development in the fields of education and research from 1995 onwards. The new strategy has aroused a great deal of interest in foreign colleagues. However, the essential thing is to succeed in proceeding towards our visions, concretising them into an action programme and implementing it. This is why we saw it as our challenging duty to bring the project plans we worked out on the threshold of the new millennium to the critical scrutiny of the international community.

We have not put any price tags on individual projects, because even at their best they would only be indicative, and proportioning them to other educational and research inputs would require a much more detailed scrutiny of financing and policy than is possible in this connection. This is why we must content ourselves with noting that in the previous strategy period the government earmarked about € 45.5 million for the purpose annually. The first year of the current implementation period will go along these lines. In the following years, however, we hope to go for a more hefty appropriation in the budget, because the measures have been quantified to come up to over € 50.5 million. We shall try to enlist other partners' resources for the implementation of the visions outlined in the strategy. Important partners in this respect are the autonomous municipalities, which run a vast majority of primary and secondary

educational establishments. Another partner that we hope will have a growing role in this undertaking is the business sector. The example of Nokia has boosted confidence in R&D in Finnish business life. We shall also make the best of the domestic and EU instruments for the implementation and financing of innovative projects.

At the same time with the strategy preparations, Finland got a new Government, for which the construction of the Finnish and European information societies is an important priority. One special focus for the Government is to develop certain matters underpinning the information society. These incontestably include the question of content production, notably the crucial area of learning materials. In this and in the whole strategy project, the educational and research communities play a key role. The projects for electronic learning materials and the digitisation of cultural heritage are mentioned only in passing here, because their elaboration will not gain momentum until the content production project has got off to a good start.

We hope that this booklet will generate as much interest as the actual strategy document. We welcome all comments from the international public and our foreign colleagues. At the end of the subprojects presented here you find the email addresses and phone numbers of the officials in charge of them. Please do not hesitate to contact us.

The document Education, Training and Research in the Information Society. A national strategy for 2000-2004 as well as this booklet can be found at:

http://www.minedu.fi/minedu/publications/online.html

Citizenship Skills

in the Information Society

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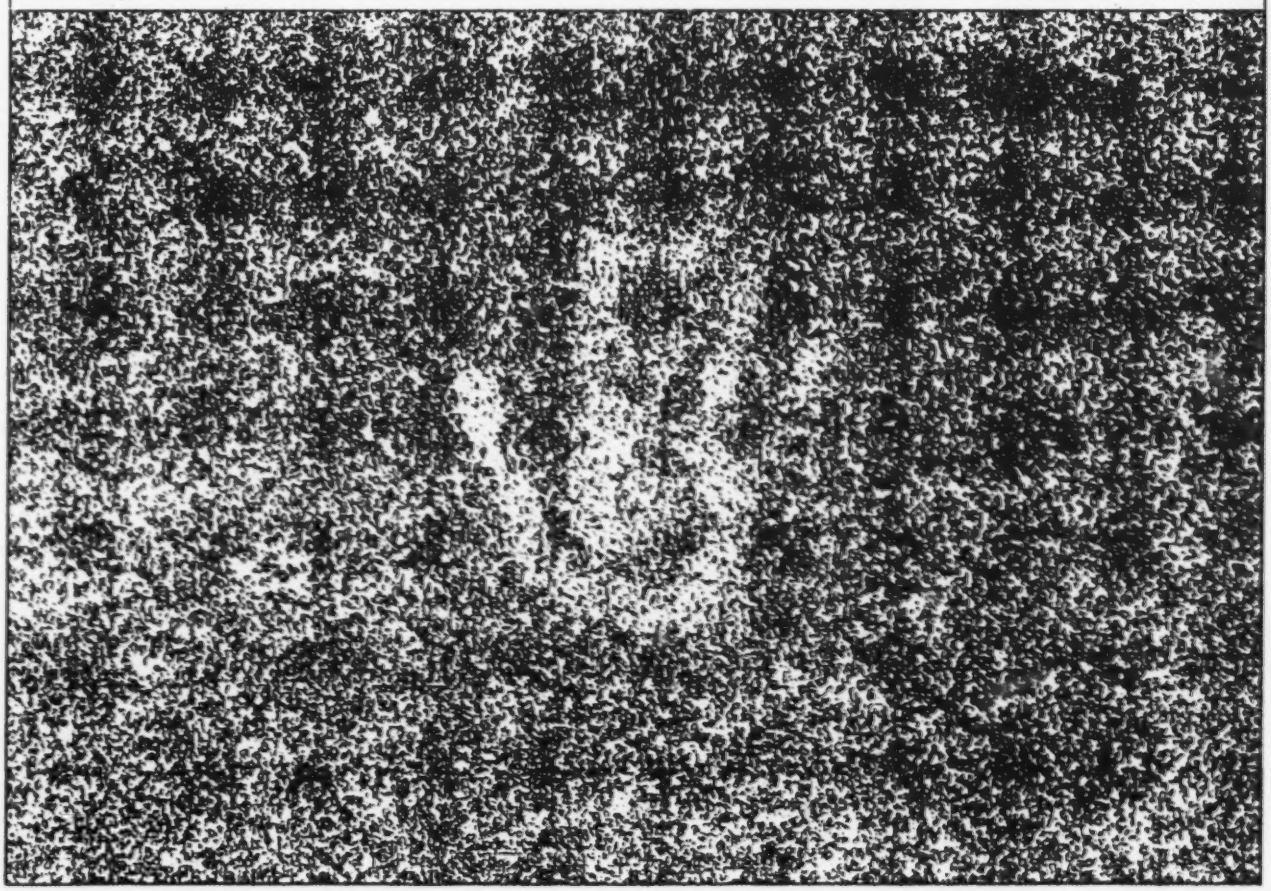

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The objectives for the project Citizenship Skills in the Information Society are the following:

- It defines the citizenship skills needed in the information society: contents and aims.
- It determines and prioritises the target groups.
- It encourages and motivates people to learn these citizenship skills.
- It determines the broadly based, cooperative learning programme with all its pilot projects.
- It creates a cooperation network and basic conditions for the implementation of the programme.
- It calls upon local authorities and civic organisations to join the programme.
- It stimulates continuing professional education in the field of education, guidance, counselling and promotes a change in work.
- It highlights the information society services and tools needed by all.

In an information society, citizenship skills must meet the needs of a networking, constantly changing and internationalising way of life. These citizenship skills are:

1 Technical skills,
2 Communication skills,
3 Skills in acquiring and using information,
4 Consumer skills, and
5 Influence on information society policy.

Applying the idea of self-motivated learning, we seek to provide the largest possible selection of educational provision, learning programmes and learning environments for all citizens, with a special effort to reach all population groups. Attention will be focused on the needs of groups outside the education system and staff development and training:

- Middle-aged and older population,
- Adult population not actively employed, and
- Special-needs groups.

Projects and partners

The action programme is composed of the following projects

1 A learning and motivation campaign for the population as a whole;
2 A know-how project implemented by a large cooperation network, and its pilot projects;

3 A project coordinated by local authorities and geared to local needs;

4 Input by civic organisations and civic activity;

5 Teaching, library and advisory personnel's know-how; and

6 Access to the net and net services to all citizens.

Success in this Citizenship Skills programme entails not only public and private funding but also across-the-board commitment and motivation for raising the knowledge and know-how level of the whole population, and thereby promoting cohesion. The major partners are

- Adult education institutions and higher education institutions,
- Libraries,
- The Finnish Broadcasting Company and other media,
- Civic organisations and social partners,
- Top business enterprises in the field, and
- Experts and administrators responsible for basic services.

OPE.FI - TRAINING

FOR TEACHING PERSONNEL

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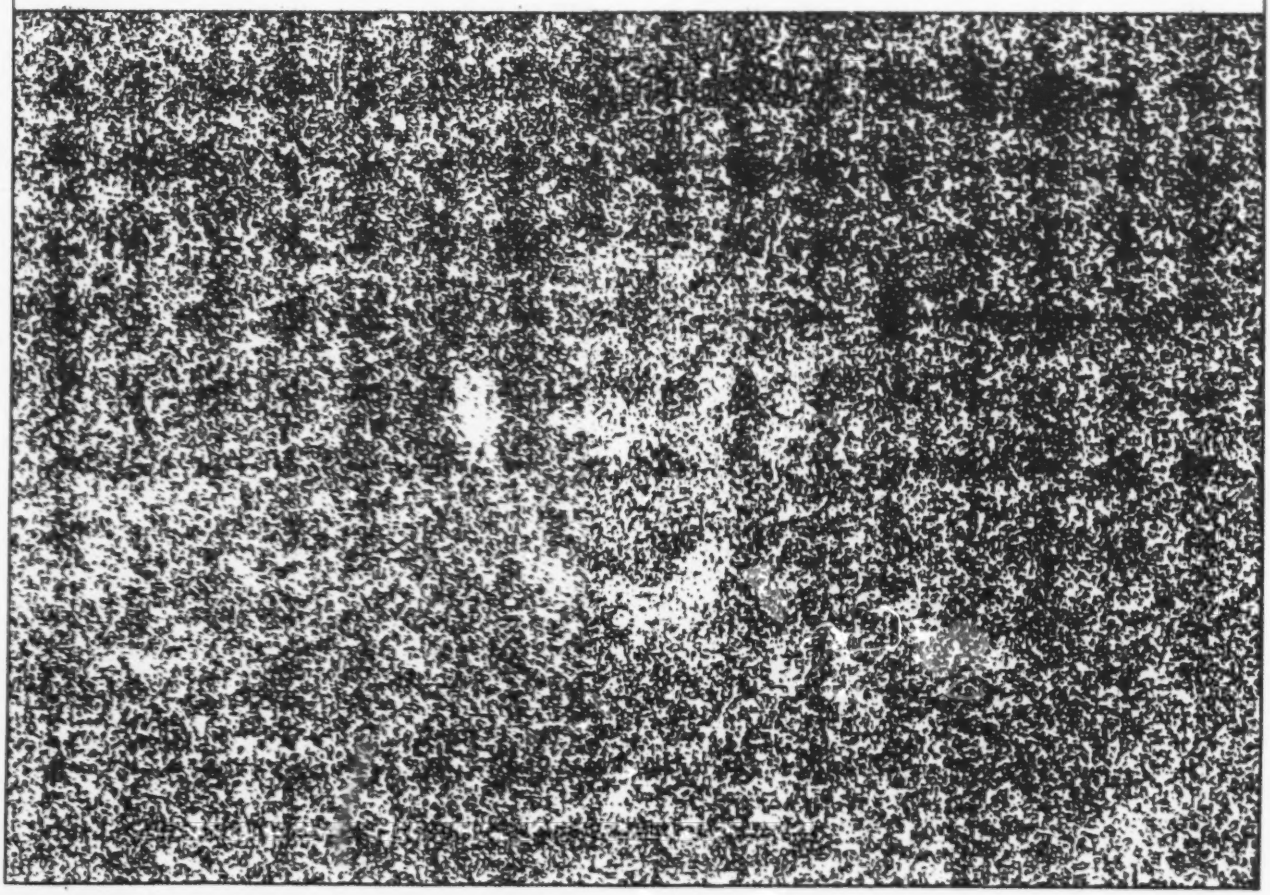

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The demarcation between the learning environments at home, school and workplace is disappearing. This requires increasing attention to net-based learning and school-work relations in teaching. This in turn requires new, more varied methods in the planning, implementation and evaluation of teaching. Similarly, more and more tracks are available in lifelong learning. It is increasingly important to guide pupils in learning to learn. Faced with this accelerating change, teachers need to improve their skills in the acquisition and management of information and in communication.

In terms of positive information society development, this necessitates not only intensified use of information and communications technologies (ICT), but also the development of operational culture in educational institutions. A major challenge for the school community is to work together towards this common aim.

Teaching personnel and the information strategy

The information strategy sets important objectives for the teaching profession. The first is to create an information strategy for each institution. The aim is that all teacher education units devise a strategy for the educational use of ICT by 2001 and all educational establishments by 2002. Another aim is that over half of the personnel working within education will have the knowledge and skills needed to use ICT for pedagogic purposes and that a large number of teachers have at least basic ICT skills.

In teachers' initial and further education, the emphasis is on the role of the whole school community in the development of educational ICT. In-service training does not only mean upgrading an individual teacher's professional skills, but must serve the whole work community. To this end, it is important to include a staff development and training plan in the strategy for the educational use of ICT.

OPE.FI project

The training of teaching personnel has been planned as a three-step OPE.FI project.

The first step comprises knowledge about the common uses of a computer, mastery of word processing, Internet browsers and e-mail, and an understanding of the principles of educational uses of ICT. These are skills which every teacher mustmaster.

The second step provides skills in using ICT for educational purposes, which at least half of teachers must master. These include a versatile use of the e-mail, the www environment and groupware: generic tools, pedagogical applications and digital material available in the subject taught, and the principles of digital learning material pro-

duction. After the second step, teachers are also able to follow developments in hardware and software and have an awareness of the social problems and challenges involved in ICT.

The third step includes specialised knowledge, which about 10% of teachers must master. These are content-specific and professional applications, the production of digital learning materials, institutional information management, and an ability to assist, support and train colleagues, develop the school community and act as part of an expert network.

The total extent of OPE.FI is about 15 credits. The education and training are provided by universities, polytechnics and the National Board of Education in collaboration.

Information industry and digital communication professionals

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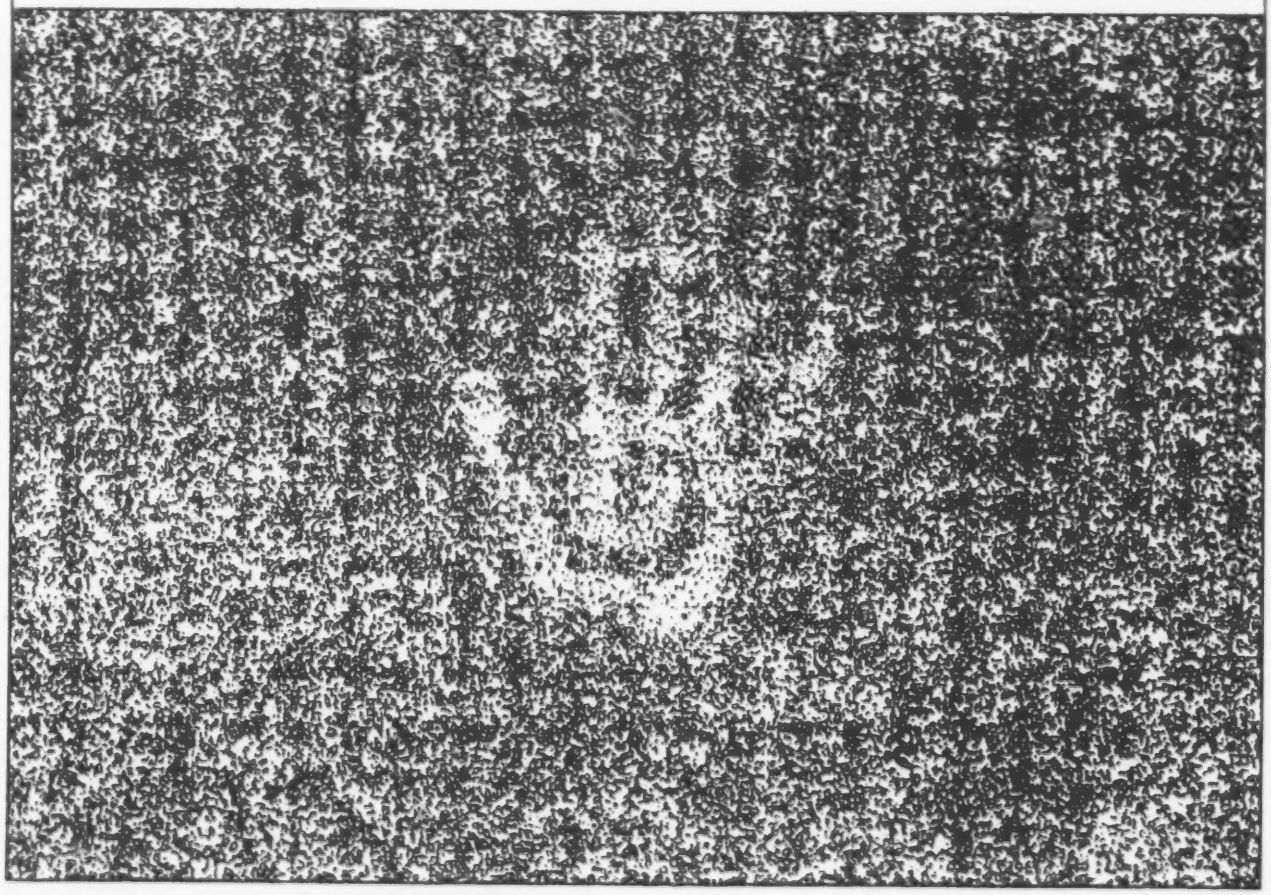

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The rapid growth in the information industry and digital communications increases demand for professionals and heightens the shortage of educators and trainers in these fields. A committee was set up to develop education and training intended for information industry and digital communications professionals, which is based on a programme for increasing and developing education relating to the electric and electronics industries, ICT and data processing (1998-2002). The programme seeks to alleviate the labour shortage in these fields by increasing initial education and training and providing retraining for people already active in the labour market.

Education and training provision has been increased substantially: from 1993 to 1998 intakes in the information industry fields doubled in universities and almost tripled in polytechnics. At the same time education in digital communications and the new media grew in both universities and polytechnics.

The aim of the project is to assess the present situation and to launch necessary measures.Another aim is to intensify the education and training of digital communications professionals.The aim is

- To make the information industry and digital communications fields more attractive for prospective students and to expand the recruitment base;
- To evaluate the implementation of the programme and to put forward new solutions for enhancing its impact and ensuring the success of the programme;
- To implement measures in cooperation with other information industry projects with a view to satisfying the demand for educators and researchers in the information industry and digital communications fields and developing the quality of their education;
- To implement measures for developing the quality of education relating to the information industry, digital communications and new media and to seek means of shortening study times;
- To create conditions for the quantitative and qualitative development of education in these fields.

According to a plan devised by the committee, an information and training campaign will be devised with a view to enlarging the recruitment base and enhancing the attractiveness of the field. Education and training will be developed in close cooperation with educational institutions, business enterprises and the new retraining programmes in the field of digital communications. The development work will be based on various university and polytechnic networks, such as the one in communication and media studies. A survey will be undertaken to map out teacher education needs in the field and to explore ways of increasing postgraduate education in the field.

VIRTUAL UNIVERSITY

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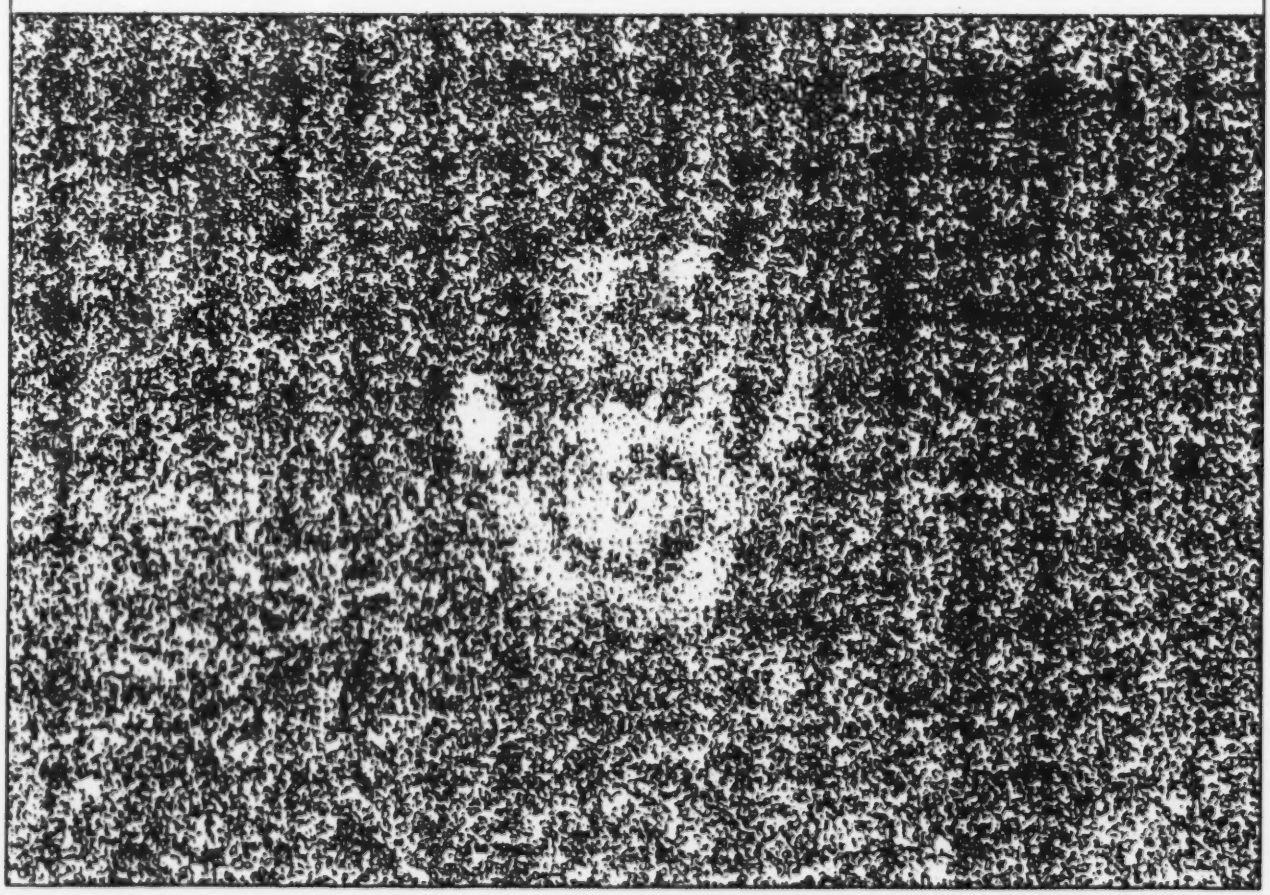

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Finland will have a virtual university by 2004 based on a consortium of several universities, business enterprises and research institutes. It will produce and offer internationally competitive, high-standard educational services.

The virtual university will be based on cooperation between universities and other partners, who will expand and diversify their provision and intensify their networking in research.

The virtual university will provide top-level knowledge and know-how and respond to the challenges of globalising competition in the educational market. The cooperation network of research and pedagogic expertise will ensure a rapid transfer of research and R&D findings to education and the world of work.

Students can take courses relating to their degree programmes in the virtual university while enro'led in a "real" university, which will award the degree. Input will be made not only into high-standard open and distance learning but also into the dissemination of knowledge through networks.

The aim is

- To establish a high-standard, internationally recognised virtual university. The provision of flexible net-based educational services requires networking between universities, research institutes and business enterprises. The virtual university will offer undergraduate, postgraduate, open university and continuing professional education.
- To expand and diversify research which supports higher education and the virtual university.
- To capitalise on ICT for effective, user-friendly advisory, guidance, learning material, administrative and educational services.

This will be achieved by means of

- Intensified networking between universities;
- Diversified provision and top-quality education and research;
- Development of relevant pedagogic know-how;
- Innovative application of ICT to teaching; and
- An attractive alternative to ordinary higher education.

Establishment

The virtual university will be established in stages. At the initial stage, the project will be coordinated by a working party appointed by the Ministry of Education. In connection with the negotiations on target outcome in spring 2000, the universities committed to launching virtual university projects in 2001-2003 will form a consortium. A development unit will be put in place to coordinate the start-up phase in collaboration with the consortium. The aim is to recruit polytechnics, business enterprises and research institutes to the consortium.

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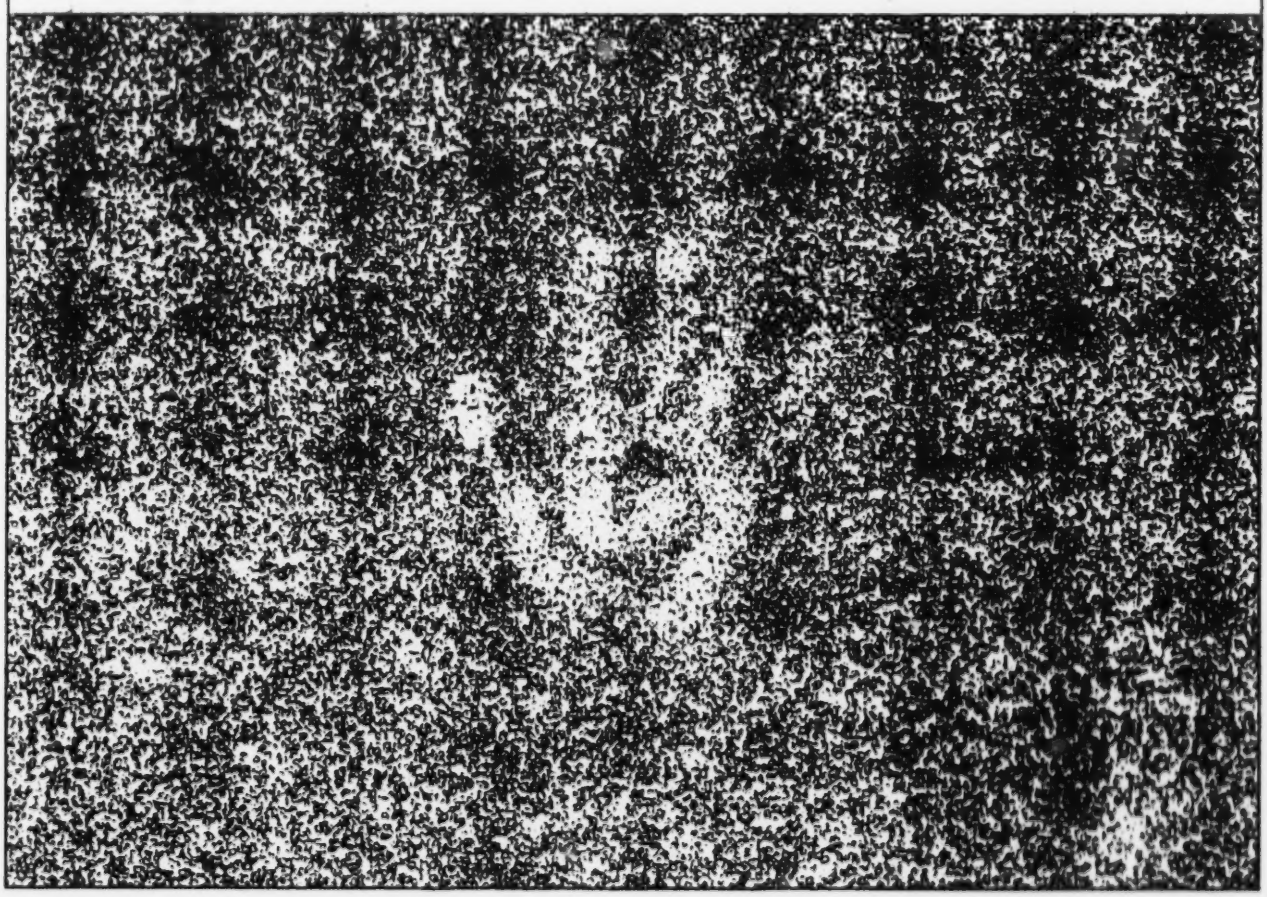

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The aim of the virtual school project is

- To develop and implement study opportunities of a high pedagogic quality which are independent of place and time and which are based on a varied use of ICT-based distance and contact education;
- To create equal opportunities for students of all ages to study for diplomas and take courses;
- To create development networks which produce and supply educational and advisory services and materials, including international services;
- To identify and solve technical, pedagogical, social and administrative problems relating to the new forms of study and learning;
- To create a forum for the development of teachers', pupils' and students' ICT skills;
- To develop and diversify cooperation between educational institutions and society, notably the world of work;
- To study and develop the principles and practices of relevant pedagogy; and
- To offer opportunities for all educational institutions to participate in the virtual school.

Subprojects

The core of the virtual school is its own user interface. The portal offers study modules, courses and other educational packages relating to different forms of education, as well as learning materials grouped according to curricula. It also disseminates good practices.

The service is composed of national, regional or local development projects undertaken by educational authorities, education and training providers and schools, which develop and produce study modules, support services and learning materials for use through the portal. These projects also seek solutions to problems in the new form of study and provide new methods for use in schools. A further aim is to look into financing and cooperation models and clarify the principles of teachers' reimbursement. The private sector can join the development work, especially in learning material production.

The virtual school offers opportunities for employed persons to study general or vocational upper secondary syllabi and for secondary students to take courses or study modules offered by other educational institutions. Subprojects will be set up to pro-

duce courses for the net, for digital radio and for digital television.

The network provides schools in sparsely populated areas and for smaller training fields with support and tools for maintaining quality educational services.

In fields of great relevance to education policy, subject-specific and thematic development networks will be set up to promote flexibility and improve quality.

One aim is to study and develop criteria and principles for virtual learning and to create model learning materials and environments.

The project helps schools to develop their activities towards a virtual school. The support to this end includes training events and conferences, as well as the portal services.

Schools are supported in hardware and software acquisitions on the condition that they undertake strategic planning, build supportive services and develop learning materials.

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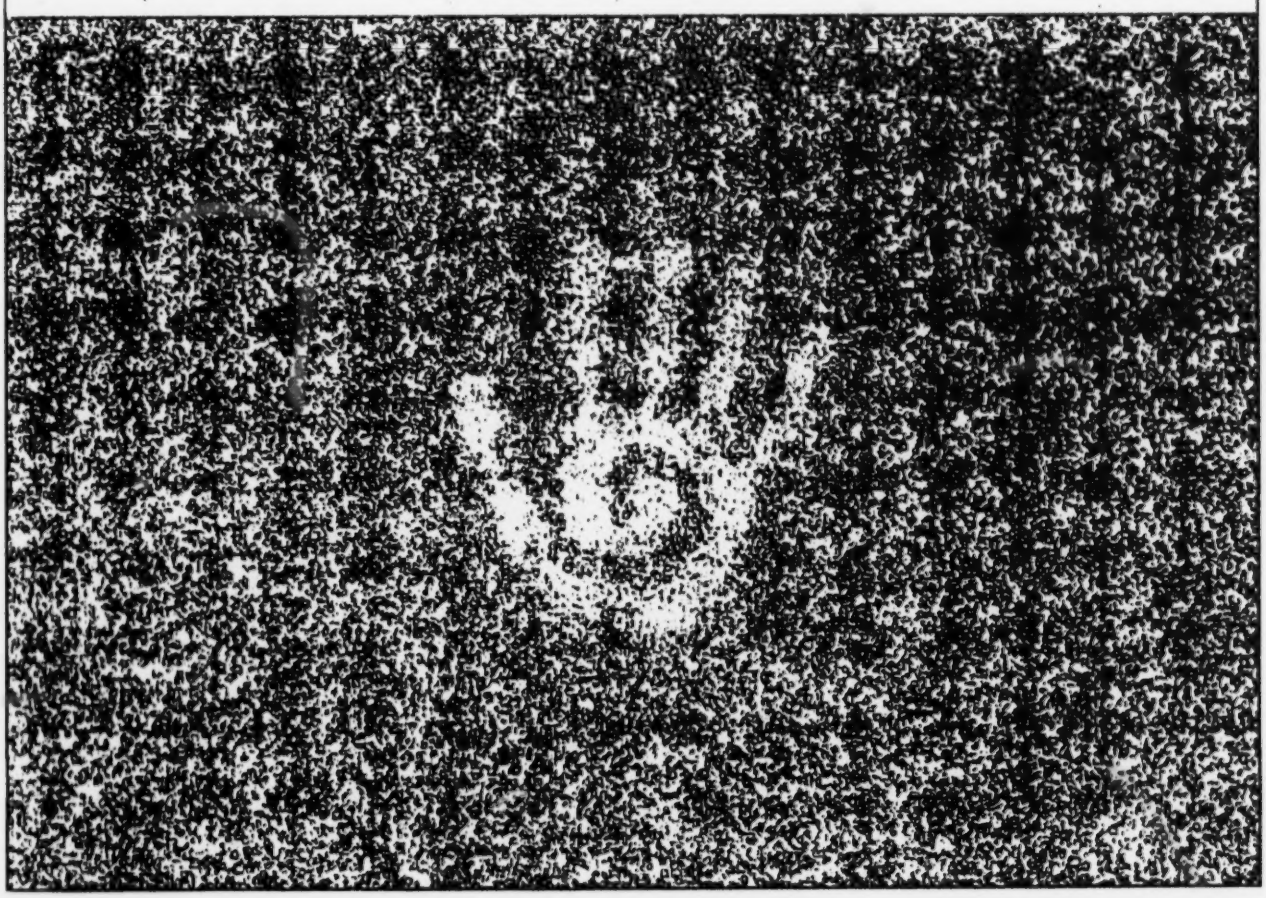

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Learning environments based on the new ICTs have not yet established themselves. What is needed is long-term research and development to identify and disseminate new, widely applicable practices. The development of teaching and learning included in the strategy require strong input into research. The implementation of versatile net-based learning environments entails major changes in educational organisations.

The aim should be to achieve a R&D system which enables different partners to translate an idea into a prototype, to commercialise the prototype into an application, and to organise both distribution and marketing for the product. R&D relating to the educational use of ICT must promote close, quality cooperation between different partners. A network will be created to this end, based on close cooperation between nationally and internationally important groups.

The learning environment R&D project caters for the needs of the virtual university and virtual school, as well as the whole information strategy. It supports the development of net-based study arrangements and develops new learning environments of high pedagogic quality.

The aim is to create a multidisciplinary R&D network which

- Helps to keep Finnish research at top world level;
- Offers research-based views on how different network schools, such as the virtual university and the virtual school, should be developed;
- Makes proposals for the development of mainstream school forms by means of the new technologies;
- Promotes research interaction between different partners involved in the project and with international centres in the field;
- Helps to commercialise digital learning materials and to use them in teaching; and
- Assists in the evaluation and research-based monitoring of the strategy project.

Operational principles and themes

One principle is that subprojects also produce applications (e.g. technical environments or pedagogic action models) which can be commercialised. The aim is that activities in the network will generate new services in organisations, or business activity, new products and immaterial rights.

The learning environment project will promote the creation of interactive networks between the school, parents, the world of work and public partners.

Alternative models and consortia will be created for the financing of R&D relating to learning environments. The aim is also to create different value chains in which research findings are applied by different operators in the field.

The project develops new alternative evaluation models for the needs of the strategy as a whole. It is important to forecast developments in Finland and abroad.

One task is to launch a multidisciplinary graduate school in learning environment research. It will primarily include educational science, psychology, media sciences, applied linguistics, computer science and information research.

Content production

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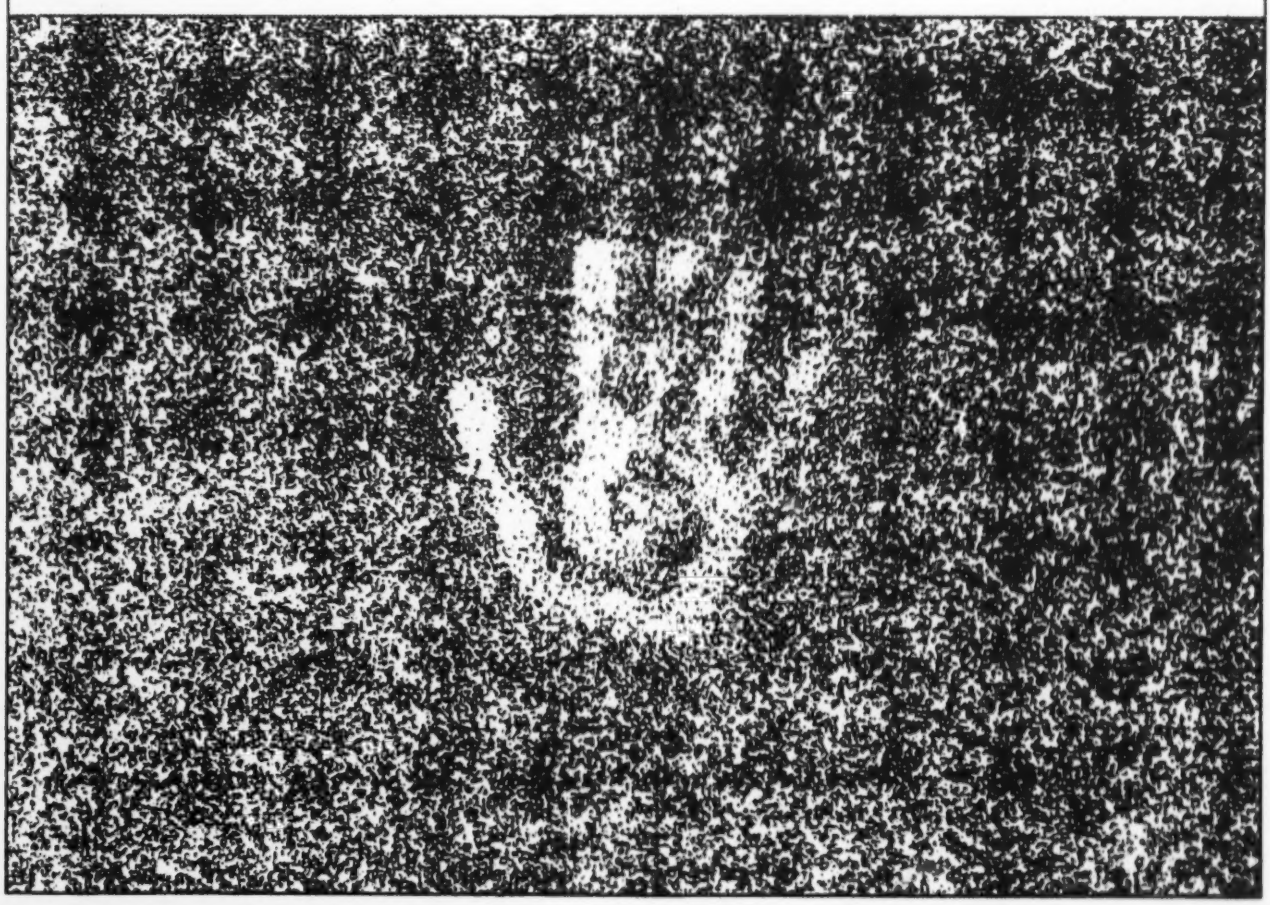

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One definition of the information society is that it is a society which makes extensive use of information networks and ICT, produces a large number of information and communications industry products and services, and has a varied content industry. This is approximately the definition on which the content production project launched by the Finnish Government is based. The information society development is thus truly getting to grips with the development of content production, applications and cultural services.

The content production committee of the Ministry of Education steers and coordinates different ministries' activities in content production, evaluates the progress of the project and modifies the objectives when needed.

The aim of the project is to boost digital culture and promote extensive use of the national cultural capital, on the one hand, and to develop content industry business and enhance its international competitiveness, on the other.

According to plans, the development programme will consist of eight areas:

- Development of know-how (education and training, research, entrepreneurship),
- Copyright issues,
- Supply of national knowledge reserves and materials,
- Development of markets (demand, public procurement),
- Back-up to regional production (new jobs),
- Internationalisation,
- Support to product development, and
- Financing and equity investment.

To this end, the Ministry has set up several taskforces: digital learning materials, digital content production, digisation of cultural heritage, digital information management, content production in sports, network services in cultural and nature tourism, copyright. These taskforces are now planning their work and projects and embarking on actual work.

The aim is to look at content industries from the perspective of product development, with focus on entrepreneurship. Content production in communications industries will be limited to content in the digital format using digital channels.

INFORMATION

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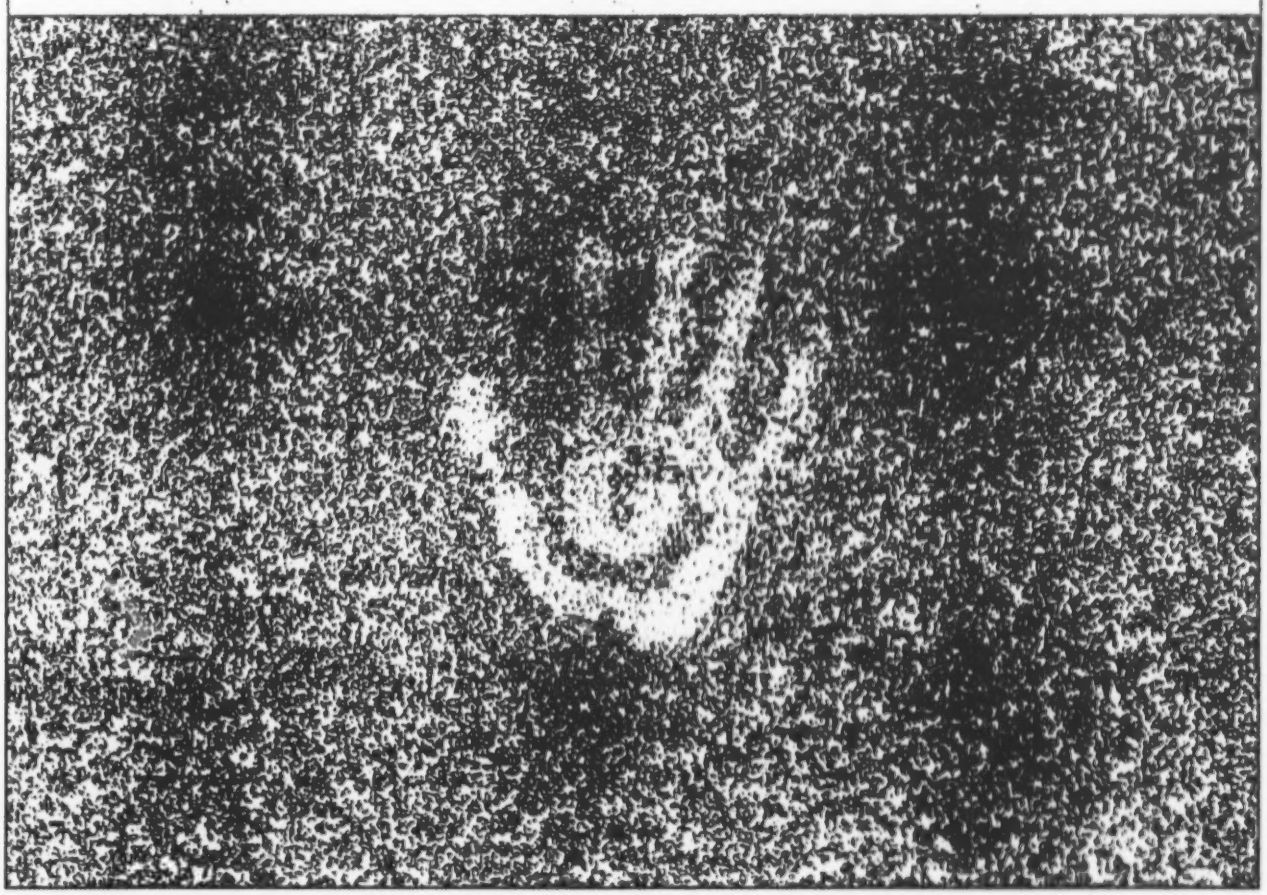

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The working party on information society structures has been set up to develop hardware and network environments in education and research and relevant supportive services. It will also monitor the distribution of relevant resources nationally and regionally.

Important information society structures include ICT equipment, information networks and software and relevant supportive services. They constitute the ICT environment for modern education and research. The progress in technology and applications is constant, which is why the measures must be geared to the ideal state prevailing at a given time.

The working party will map out the present situation and organise future annual collection of data with a view to monitoring changes and allocating resources according to need.

The purpose is to come up with some key indicators relating to information society structures which describe the state of and changes in the infrastructure and can be used to monitor the development of structures. The initial data will be available in June 2000.

The implementation of the different information strategy projects requires a strong infrastructure. State funding for acquisitions must be increased from the previous strategy period. This means allocating larger budget appropriations to hardware acquisitions and information networks. The wowking party's aim is to prepare an annual proposal for budget appropriations and for the principles of their allocation.

Creating a user-friendly information society in education and research also requires standardisation and R&D relating to physical learning environments.

The new technologies make certain demands on the ergonomics of equipment and physical structures. This is why the planning, construction and use of premises must take account of the demands of future technologies, some of which are still impossible to anticipate at this stage. The term user-friendly also means access for all citizens to services offered by means of ICT and help in their use, when needed.

The aim is to launch an R&D project for the development of a user-friendly learning environment. It is projected for completion towards the end of 2001.

Evaluation of the implementation and impact of the information strategy

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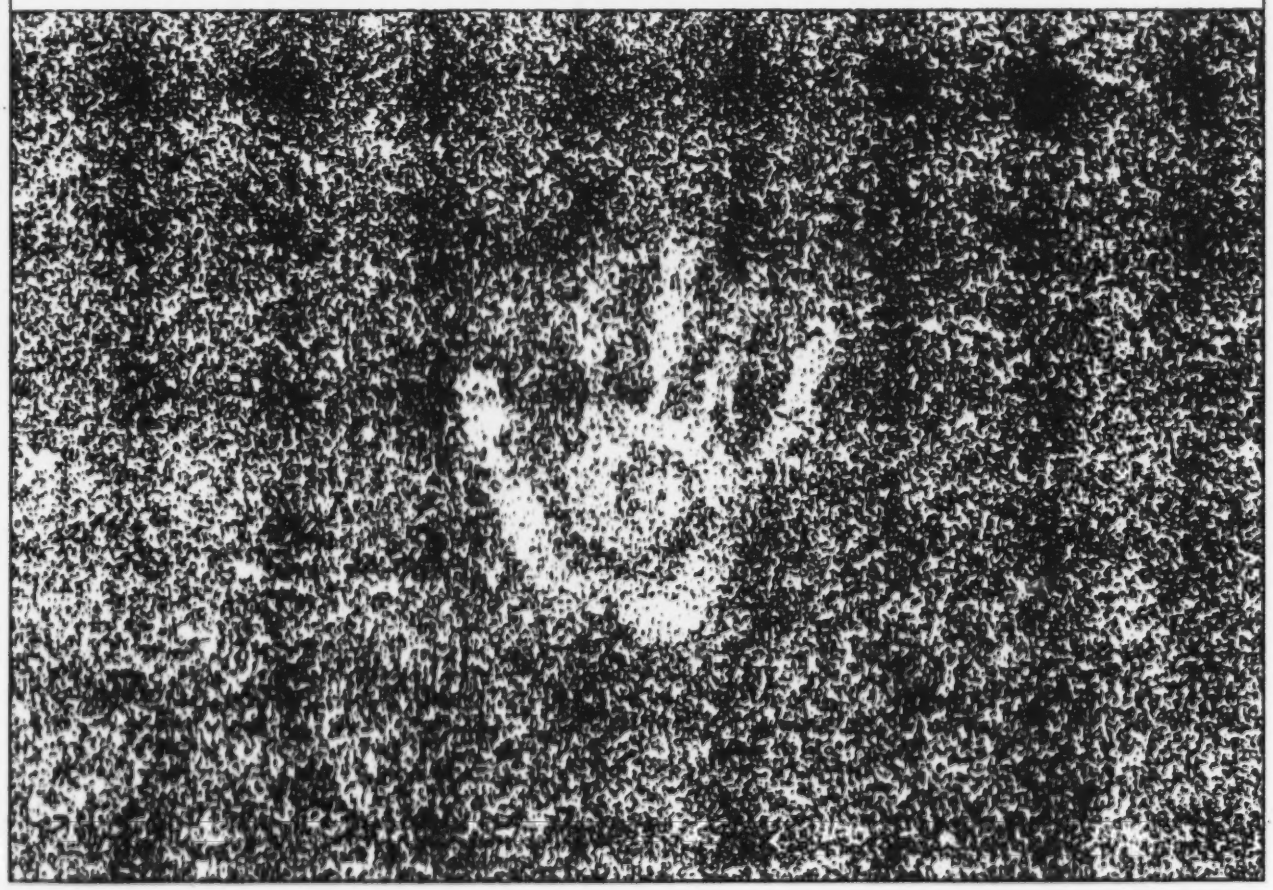

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The information strategy must be monitored to find out how it progresses, what is being done and effected, and to improve and intensify its implementation, which will also produce material for evaluation. A large evaluation group consisting of experts will be gathered. This will ensure the best possible evaluation process in support of the implementation.

Final evaluation of the previous strategy period

A small-scale evaluation will be undertaken to supplement the evaluation and research data gathered earlier on the implementation of the previous information strategy, its impact and implementation. The findings will be used in the implementation of the evaluation of the new strategy.

Evaluation of the new strategy

The purpose of the evaluation is to ensure effective, high-quality action. The aim is to evaluate the strategy, the implementation of its objectives and developments taking place during the strategy period. It is also important to obtain information about the impact of the implementation and the actions of different operators on the attainment of the objectives.

In order to optimise efficiency and appropriateness, the evaluation, which will comprise self-study and external evaluation, must be continuous and produce information about the process itself, implementation tools, the efficiency and appropriateness of the implementation for use in development during the strategy period.

The expedient form of action in evaluation is networking, which ensures synergy. The evaluation body must include experts on evaluation as well as representatives of the different projects involved in the implementation of the strategy. It will work together with the projects to determine the criteria for evaluation. Evaluation must be carried out in close interaction with multidisciplinary R&D projects. This is why most of resources should be allocated to the evaluation of quality rather than quantitative aspects, which are much easier to gauge.

Events and products

In addition to the compilation of monitoring data and self-study, the evaluation group will:

1 Map out the initial situation in winter 2000;

2 Collect appropriate monitoring data annually;

3 Organise an evaluation seminar each year from 2000 to 2005;

4 Undertake a number of separate evaluations e.g. one in each priority area (know-how, network learning, learning materials/content production, structures);

5 Conduct an interim evaluation in 2002/2003; and

6 Publish a final report in 2004/2005.

OPETUSMINISTERIÖ

Undervisningsministeriet

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